YOUNG INSTRUMENTS

BAC-420BE

Large Battery Adiabatic Calorimeter

Advanced Technology

High Efficiency

Safety

The BAC-420BE is designed for studying large battery cells and small modules with long sides ranging from 100mm to 600mm. It can perform tests on battery thermal runaway, gas generation, heat generation during charging and discharging, and specific heat capacity. The instrument precisely measures parameters such as heat generation and specific heat capacity under low-temperature conditions, the onset temperature of thermal runaway, the maximum rate of thermal runaway, adiabatic temperature rise characteristics, gas generation volume, and gas generation rate.

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Product Features

- Features adiabatic thermal runaway, auxiliary heating with heating wires, gas collection and pressure testing, thermal/electrical/mechanical abuse, specific heat capacity testing, charge/discharge heat generation testing, multi-point temperature measurement, and video surveillance.
- The standard low-temperature cooling module can reduce the initial experimental temperature to -25°C.
- Self-exothermic detection sensitivity is significantly better than the standard threshold of 0.02°C/min, with high adiabatic performance and minimal wall-sample temperature difference.
- An innovative auxiliary heating wire solution can increase experimental efficiency by up to 5 times.
- The furnace features a bursting disc and spring lock design, and includes a standard explosion-resistant box. This dual protection ensures the safety of both experimental personnel and equipment.

Application Value

- **Adiabatic Thermal Runaway**
- **Charge/Discharge Heat Generation Testing**
- **Adiabatic Temperature Rise Characteristics Testing**
- **Combined Adiabatic Thermal Runaway and Gas Generation Testing**
- **Specific Heat Capacity Testing**
- **Online/In-Situ Analysis of Battery Gas Generation**

Test Standards

GB/T 36276-2023 | UL 9540A | ASTM E1981-98(2012)
SN/T 3078.1-2012 | USABC SAND99-0497, July 1999
SAE J2464-R2009 | Freedom CAR SAND 2005-3123
UL 1973 | GB 38031-2020

Technical Specifications

Adiabatic Furnace Dimensions	420 mm (Diameter) × 520 mm (Depth)
Self-exothermic Detection Sensitivity	0.02–0.05 °C/min
Temperature Difference between Furnace and Sample in Constant Temperature	≤ 0.5 °C
Temperature Control Range	-25–300 °C, with liquid-nitrogen-tank cooling as standard configuration
Temperature Tracking Rate	0.02–13 °C/min
Operating Pressure Range	0–2 MPa
Maximum Nail Penetration Stroke	Software-configurable
Charge and Discharge Column Overcurrent Capability	-500 to 500 A